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**REMARKS**

***A. Claim Rejections - 35 U.S.C. § 102***

***A(i). Claim 1***

Claim 1 has been rejected under 35 U.S.C. § 102(b) over Japanese Published Application No. JP02001092155A to Kozuka. Claim 1 has been amended to more clearly recite that which the Applicants regard as the invention and, in so doing, the subject matter of claim 5 has been added to claim 1. Claims 2-5 have been canceled.

Claim 1 recites that an elevation data set is generated using a contactless capacitance probe to scan an EUV mask (see page 6, line 24 to page 7, line 10 of the application). As such, the probe uses an electrical capacitance parameter to generate the elevation data and does not make physical contact with the EUV mask.

Kozuka does not teach or reasonably suggest the claimed use of a contactless capacitance probe to generate elevation data related to an EUV mask. (See, "solution" section of the English translation portion of the reference). Rather, Kozuka uses "contact type displacement sensors." Not only do the teachings of Kozuka differ from the subject matter of claim 1, Kozuka has the potential disadvantage of running the risk of damaging the mask during measurement by physically contacting the mask. Also, at least the translated portion of Kozuka does not disclose that the displacement sensors measure a capacitance parameter.

Since Kozuka does not teach or reasonably suggest the claimed subject matter, reconsideration and withdrawal of the rejection under 35 U.S.C. § 102(b) is requested.

***A(ii). Claims 1 and 14***

Claims 1 and 14 have been rejected under 35 U.S.C. § 102(e) over U.S. Patent No. 6,597,434 to Van Dijsseldonk. Amendments to claim 1 have been described above. Claim 14 has been amended to more clearly recite that which the Applicants regard as the invention and, in so doing, the subject matter of claim 15 has been added to claim 14.

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Each of claims 1 and 14 recite that a contactless capacitance probe scans an EUV mask to generate elevation data for the EUV mask. Van Dijsseldonk does not teach or reasonably suggest the claimed contactless capacitance probe. Rather, Van Dijsseldonk discloses the use of an optical level sensor (see column 6, lines 34-52). While such a sensor may not make contact with the mask being measured, Van Dijsseldonk does not anticipate the claimed subject matter.

Also, with respect to claim 1, Van Dijsseldonk does not teach or reasonably suggest checking for contamination if a flatness profile exceeds tolerance parameters or cleaning such contamination if the contamination is present. Rather, Van Dijsseldonk teaches away from the claimed subject matter by compensating for contamination by using a membrane and spring arrangement with a corrective deformation scheme to flatten the mask in the presence of the contamination (see, column 6, lines 15-23).

With respect to claim 14, Van Dijsseldonk does not teach or suggest a controller that executes logic to conduct first and second scans and rotate the EUV mask with respect to the chuck between scans, or to determine if any detected flatness variations rotate with the EUV mask. Although Van Dijsseldonk may conduct a second scan, the second scan is carried out without rotating the mask and is used only to determine if adjustments to flatten the mask were made properly (see, column 7, lines 7-10).

Since Van Dijsseldonk does not teach or suggest the claimed subject matter, reconsideration and withdrawal of the rejection under 35 U.S.C. § 102(e) is requested.

***B. Claim Rejections - 35 U.S.C. § 103(a)***

***B(i). Claims 1 and 14***

Claims 1 and 14 have been rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 4,666,291 to Taniguchi. Amendments to claims 1 and 14 have been discussed above.

Although Taniguchi does disclose a mask flatness detector (reference numeral 4), Taniguchi does not disclose that this detector is a contactless capacitance probe as

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claimed (see, column 3, lines 42-65). Also, figure 1 illustrates that the mask 7 is scanned for flatness in the position indicated by reference number 7a (i.e., when the mask is not chucked) and then the mask is moved to a position for imaging the wafer. Furthermore, the mask of Taniguchi is a transmissive mask. As such, it is submitted that the mask of Taniguchi is not chucked in the claimed manner during scanning. Chucking involves clamping the mask over the area of the mask with, for example, electrostatic forces. In a transmissive mask, one cannot place the mask against a chuck platten and perform the clamping function as the chuck would interfere with transmission of the exposure dose.

Even if one were to overcome these deficiencies of Taniguchi, Taniguchi still does not teach or reasonably suggest checking for contamination if a flatness profile exceeds flatness tolerance parameters as set forth in claim 1. Nor does Taniguchi teach or reasonably suggest a controller that executes logic to conduct first and second scans and rotate the EUV mask with respect to the chuck between scans, or to determine if any detected flatness variations rotate with the EUV mask as set forth by claim 14. A number of unmotivated changes would be required to respectively arrive at the subject matter of claims 1 and 14.

Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a) is requested.

*B(ii). Claims 2-4 and 11-16*

Claims 2-4 and 11-16 have been rejected under 35 U.S.C. § 103(a) over Van Dijsseldonk in view of U.S. Patent No. 6,537,844 to Itoh. As indicated, claims 2-4 have been canceled, claim 14 has been amended, claim 15 has been canceled, and claim 16 has been amended to depend from claim 14. Independent claim 11 has been amended to more clearly recite that which the Applicants regard as the invention. Claims 12-13 depend from claim 11.

Claim 11 recites scanning a chucked EUV mask to generate a first flatness profile, removing and rotating the EUV mask with respect to the chuck and re-scanning

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the EUV mask, which has been rechucked in the rotated position. Deficiencies in the disclosure of Van Dijsseldonk with respect to the claimed subject matter are discussed above. Itoh does not cure the deficiencies of Van Dijsseldonk. Itoh is interested in the effect of mask chucking on the flatness of various mask blank profile types (e.g., convex, concave, saddle and semi-cylindrical) so that the proper mask blank type can be selected for a particular apparatus (see, column 1, lines 61-67 and column 15, line 65 to column 16, line 9, for example). To address this goal, Itoh makes a first scan without chucking the mask blank to determine the type of blank. Therefore, Itoh does not teach or suggest a first scan while the mask is chucked, even though Itoh's second scan is conducted while the mask blank is chucked to determine the effect that chucking has on the mask blank type.

Another deficiency of Itoh is that Itoh does not teach or suggest rotating the mask with respect to the chuck between scans. Although it is recognized that Itoh rotates a semi-cylindrical mask blank with respect to another semi-cylindrical mask blank, this rotation is different from the claimed rotation. The rotation of Itoh is carried for different mask blanks and is used to find which mask blank (the unrotated blank or the rotated blank) has the best flatness when chucked (see, for example, column 6, line 24 to column 7, line 29). These teachings of Itoh also teach away from the subject matter of claim 12 that recites comparing the results of the claimed scans to determine if flatness variations rotate with the EUV mask. Itoh does not make this determination and, at best, attempts to determine if overall flatness improves with rotation of a mask blank type.

For at least these same reasons, the proposed combination does not teach or reasonably suggest the subject matter of independent claim 14 or dependent claim 16.

As should be apparent, even if one did combine the teachings of Van Dijsseldonk and Itoh, the claimed invention would not result and unmotivated changes would be required to arrive at the claimed invention. Also, advantages attainable with the claimed invention would not be achievable with the proposed combination. For example, the proposed combination would not be able to reduce the number of false

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positive mask flatness errors detected using a conventional flatness evaluation technique (see, for example, page 10, line 27 to page 11, line 7 of the application).

Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a) is requested.

*B(iii). Claims 5-10*

Claims 5-10 have been rejected under 35 U.S.C. § 103(a) over Van Dijsseldonk in view of Itoh and further in view of U.S. Patent No. 5,442,163 to Nakahara. Claim 5 has been canceled, but its subject matter has been added to independent claim 1. The dependency of claims 6 and 8 has been amended for consistency with the other amendments.

The deficiencies of Van Dijsseldonk, Itoh and their combination have been discussed above and, for the sake of brevity, will not be re-discussed in detail. Nakahara does not cure these deficiencies. Although Nakahara does teach cleaning of lithographic masks, there is no indication that Nakahara's cleaning is done in response to a flatness profile exceeding a flatness tolerance parameter as claimed. Rather, Nakahara inspects the mask using a photoelectric means to detect foreign particles (see, for example, claim 5 cited by the Examiner and column 11, line 60 to column 12, line 6). Moreover, Van Dijsseldonk teaches away from cleaning by compensating for particulate contamination (see above). As a result, one would not be motivated to combine Nakahara with Van Dijsseldonk.

For at least these reasons, the proposed combination does not teach or reasonably suggest the claimed subject matter and unmotivated changes would be required to arrive at the claimed subject matter. Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a) is requested.

*C. New Claims*

Claims 17-20 have been added, each of which recite additional novel and unobvious aspects of the present invention.

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*D. Conclusion*

In light of the foregoing, it is respectfully submitted that the present application is in condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned representative to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge same to our Deposit Account No. 18-0988, our Order No. H1540.

Respectfully submitted,

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